J. M. BLACKMAN.

Improvement in Hot Air Furnaces.

No. 115,270. Patented May 30, 1871.

Fig. 1.

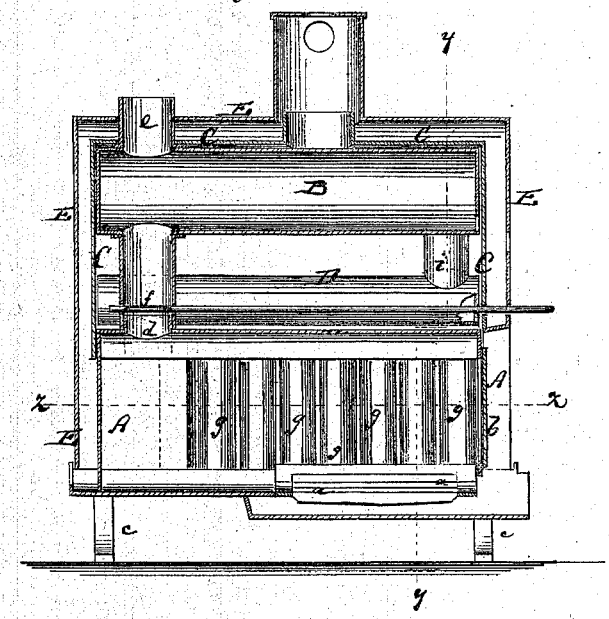


Fig. 2.

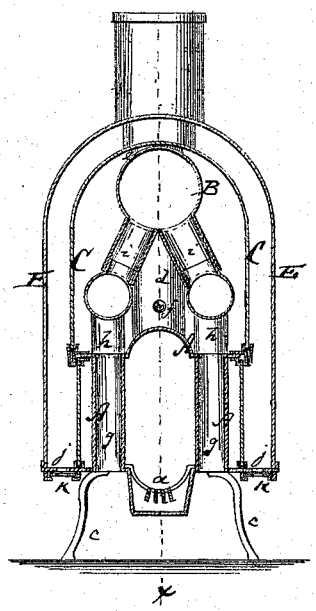
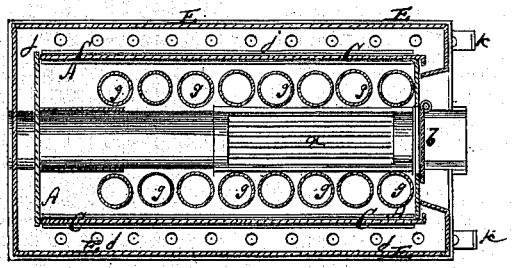


Fig. 3.



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UNITED STATES PATENT OFFICE.

JAMES M. BLACKMAN, OF DECORAH, IOWA.

IMPROVEMENT IN HOT-AIR FURNACES.

Specification forming part of Letters Patent No. 115,270, dated May 30, 1871.

To all whom it may concern:

Be it known that I, JAMES M. BLACKMAN, of Decorah, in the county of Winneshiek and State of Iowa, have invented a new and Improved Hot-Air Furnace; and I do hereby declare the following is a full, clear, and exact description thereof, which will enable others skilled in the art to make and use the same, reference being had to the accompanying drawing forming part of this specification, in which—

Figure 1 represents a vertical longitudinal section of my improved hot-air furnace, the line *x x* in Fig. 2 indicating the plane of section. Fig. 2 is a vertical transverse section of the same, the line *y y* in Fig. 1 indicating the plane of section. Fig. 3 is a horizontal section of the same, the line *z z* in Fig. 1 indicating the plane of section.

Similar letters of reference indicate corresponding parts.

This invention relates to a new hot-air furnace, which is so constructed that it can be regulated to produce more or less heat with a given quantity of fuel and economize fuel to the utmost practical extent. The invention consists in a new general arrangement of smoke-passages, air-pipes or openings, and covering-domes, all the parts being connected in such manner as to produce the desired effect.

A in the drawing represents the fire-chamber of my improved heater, the same being provided with a suitable grate, *a*, and fire-door *b*, of suitable construction. The fire-chamber is of cylindrical, prismatic, or other suitable shape, supported on suitable legs or standards *c*, and made of cast-iron or other material. It connects at its rear end with a smoke-flue, *d*, which leads into a horizontal smoke-chamber, B, whence the smoke can finally escape through a flue, *e*, to the chimney. The flue *d* contains a damper, *f*, by which the escape of smoke through the stated channel can be arrested. *g g* are vertical tubes extending from bottom to top of the fire-chamber along the sides of the same—that is to say, the said tubes are arranged in two rows, one parallel with and a short distance from either side of the chamber. These tubes are open at both ends and serve as air-passages, being open to the air at their lower ends. Their upper ends lead to an air-chamber which is formed around the upper part of the heater by a dome, C, placed over the same. D D are two horizontal smoke-chambers arranged above the sides of the chamber A, and connected, by short pipes *h h*, with those parts of the same which are between the tubes *g* and the sides of A, respectively. Flues *i* connect the chambers D and B, as shown. When the damper *f* is closed the smoke will pass through the spaces between the several tubes *g*, heating the same, and then enter the chambers D, by which it is conducted to B, and can thence escape. The spaces between the several tubes *g* are about equal in area, taken all together, as the flue *d*. The air which passes through the tubes *g* into the dome C becomes heated by the tubes *g* and smoke-chambers B and D, so that it can be utilized to heat the same room in which the heater is set up, or any other apartment to which such air may be conducted through a suitable pipe. E is another dome, placed over the dome C, its lower edge resting on a horizontal flange, *j*, of the chamber A. An air-space is thus formed between the domes C and E, which is supplied with air through openings in the flange *j*. These openings can be closed or opened by means of perforated slides K. Whenever the heat produced by the furnace and air-passages *g* is sufficient, the slides K are opened to let air into the dome E, so that the same will also be heated by the hot dome C. The air thus heated can be utilized in the same manner as that contained within the dome C.

Having thus described my invention, I claim as new and desire to secure by Letters Patent—

The hot-air furnace composed of the fire-chamber A, smoke-chambers B and D, domes C and E, and provided with the air-tubes *g* and perforated flange *j*, substantially as herein shown and described.

JAS. M. BLACKMAN.

Witnesses:
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